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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,737	09/18/2003	Chester L. Smitherman	127976-1000	5612

40184 7590 06/08/2005

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EXAMINER
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ZANELLI, MICHAEL J

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/664,737	<b>Applicant(s)</b> SMITHERMAN ET AL.	
	<b>Examiner</b> Michael J. Zanelli	<b>Art Unit</b> 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 April 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

1. This is responsive to the amendment filed 4/14/05. Claims 1-22 are pending.
2. Replacement drawings were received on 4/14/05. These drawings are not approved because applicant has removed necessary legends which were previously provided in the original drawings (see Figs. 1, 1A, 1B, 10 and 13).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garrot, Jr. et al. (5,878,356) in view of Pack et al. (US 2002/0060784) and Hofmann (4,689,748).

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A. As per claims 1, 8 and 15, Garrot discloses a system for mapping a surface (Abs; Fig. 1) comprising: a GPS antenna/receiver (19,20) for receiving global positioning signals from GPS satellites (i.e., transmitters); attitude measurement unit (26); imaging array (12); and a computer (30) connected to the above devices to correlate obtained images of the surface with position/measurement parameters (col. 5, line 66 to col. 6, line 12). Garrot further discloses that each pixel comprising the obtained image is georeferenced by absolute coordinates (col. 12, lines 6-11). The claimed invention differs in that an elevation measurement unit is included; however, Garrot suggests that one can supplement the image data with digital elevation data (see col. 11, lines 51-54). One of ordinary skill in the art would have found it obvious to utilize known means in the surface imaging art to provide the elevation data. For example, Pack discloses a topography system which provides both surface images and elevation data and uses that information with position and orientation information to generate surface images (Abs). One of ordinary skill in the art would have found it obvious to incorporate the elevation measurement unit of Pack because it would have provided the elevation data at the same time as the images were obtained, thus eliminating the need to access a separate elevation database during post-production. The claims further differ in the structure of the imaging array. Garrot discloses a preferred embodiment which includes an infrared imager; however, Garrot suggests that other types of imaging devices may alternatively be used (col. 6, lines 21-24). One of ordinary skill in the art of surface imaging would have been motivated to utilize other known imaging devices. For example, Hofmann discloses an optical imaging

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device used in generating surface images. As shown in Fig. 1a, the device (10) constructed for installment in an aircraft would have necessarily included a housing for containing a plurality of image sensors (A-C) and an aperture (D) through which the focal axes intersect as shown (see also col. 3, lines 28-33). One of ordinary skill in the art would have found it obvious to alternatively utilize the imaging device taught by Pack because Garrot suggests that various types of imaging devices may be used in his system.

B. As per claims 2-7, 13, 14 and 16-22 as above whereby the teachings of Hofmann illustrate the basic optical relationships between the imaging devices and their focal axes relative to the aperture. One of ordinary skill in the optical imaging art would have found it obvious that the teachings of Hofmann could be extrapolated to incorporate additional imaging sensors and focal axes whereby the orientation of the imaging sensors and focal axes would have defined the corresponding imaging plane(s).

C. As per claims 9, 10, and 12, as above whereby Garrot discloses using GPS information from satellites as well as ground-based stations (col. 7, lines 24-35) and that attitude measurements are provide by a gyroscope (Fig. 1:26).

D. As per claim 11, as above whereby Pack provides the elevation data from a LIDAR (Abs).

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited documents are of general interest.

6. **REMARKS**

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A. Applicant's arguments filed 4/14/05 have been fully considered but they are not persuasive.

B. Applicant argues that the claims are distinguishable because applicant's imaging sensors generate arrays of pixels. The claims set forth one or more imaging sensors whereby each imaging sensor generates an array of pixels. Applicant states that Hoffman uses a line scan sensor which records successive images in rows of pixels. A row of pixels is a one-dimensional array and thus meets the claimed subject matter. Furthermore, it is unclear to the examiner as to the distinction over a line scanner given the description of the imaging sensor at paragraphs [0016] and [0029] of the specification.

C. Applicant's arguments regarding complex analytic equations is unclear since such equations are not explicitly recited in the claims. Clearly the prior art involves computer-based analysis and processing of navigation and/or image information. Applicant's argument that the prior art is not "complex" compared to applicant's claimed invention appears to be unsupported by the facts.

D. With regards to the Park reference, this reference was cited for its teaching of incorporating elevation data with image data, not the use of one or more digital cameras *per se*.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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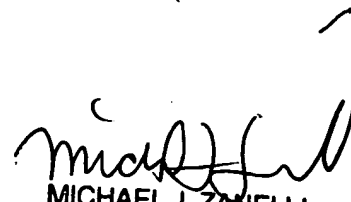
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Zanelli whose telephone number is (571) 272-6969. The examiner can normally be reached on Monday-Thursday 8:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/mjz

  
MICHAEL J. ZANELLI  
PRIMARY EXAMINER